# Toward the implementation of the Income Stabilization Tool: an analysis of factors affecting the probability of farm income losses in Italy

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Jel codes: G32, Q12, Q18


## Abstract

*Over the last years, EU agricultural farms suffered an increased sensitivity to market fluctuations in terms of both production flows and incomes, due especially to climate change and market globalisation. In addition to previous instruments as insurances and mutual funds, the new reform of European Common Agricultural Policy 2014-2020 proposes a new instrument, namely the Income Stabilisation Tool (IST), in order to specifically support farmers' severe income drops. This study aims at contributing to the lively debate on risk management linked to the implementation of the IST by estimating the probability of income loss in relation to farm attributes in Italy.*


***Keywords:*** *risk assessment, Income Stabilization Tool, CAP 2014-2020, rural development.*


## Résumé

Au cours des dernières années, les agriculteurs européens ont subi de plein fouet les conséquences des fluctuations du marché en termes de flux de production et de revenu, en particulier en raison du changement climatique et de la mondialisation des marchés. En plus des dispositifs existants tels les assurances et les fonds de mutualisation, la nouvelle réforme de la politique agricole commune européenne 2014-2020 propose un nouvel outil, à savoir l'instrument de stabilisation des revenus qui vise spécifiquement à soutenir les agriculteurs confrontés à de fortes réductions de revenus. L'objectif de ce travail est de contribuer au débat animé sur la gestion des risques liés à la mise en œuvre de l'instrument de stabilisation des revenus, en estimant la probabilité de perte de revenu par rapport aux attributs des exploitations agricoles en Italie.


**Mots-clés :** gestion des risques, instrument de stabilisation des revenus, PAC 2014-2020, développement rural.

## 1. Introduction

In association with the recent economic crises, nowadays the increasing price volatility, that is associated with unexpected variations in agricultural commodity prices, represents a new feature of the EU agricultural sector. Such unpredictable phenomenon globally affects both agricultural production and farmers' income and contributes to generate an increasingly uncertain economic framework. Not to mention that those price and income volatility are expected to persist in the future, leading to a number of negative consequences (Tangermann, 2011) as a major exposure to risks for agricultural enterprises (Capitanio, 2010; Adinolfi *et al*, 2011). However, it is worth highlighting that agriculture is *per se* a risky business (Lehmann and Finger, 2012), being a result of natural processes; accordingly, the variability of weather conditions beside the climate change entail the variability in yields and revenues (Antón *et al.*, 2012), leading to the systemic character of risks (Enjolras *et al.*, 2012).

Among others, the stabilization of agricultural market as well as ensuring a fair standard of living for farmers traditionally have represented some fundamental objectives of the European Common Agricultural Policy (CAP) from the beginning, as stated by the Treaty of Rome (1957). It follows that a more targeted public support and policy responses with regard to risk management provisions for the agricultural sector are nowadays required, in order to minimize all the expected and unavoidable negative implications of market volatility and income uncertainties.

In line with this, although the EU policies and also each Member State historically provided risk management programmes for market stabilization, nowadays a renewed emphasis is focused on such mechanisms, as previous guarantees (e.g., direct payments) for farmers have been declining (De Castro *et al.*, 2012). Indeed, the original market and price support provided by the CAP from its beginning faced some relevant changes over time; accordingly, in 1992 the MacSharry reform switched the original price support guarantees to direct payments, which became decoupled later (Single Payment Scheme - SPS), with the Mid-Term Review in 2005. Hence, these more market- oriented CAP reforms have led to the progressive reduction of farmers' marginal units of production (as this was no more necessary to earn subsidies, as the headage payment) on one side; on the other, they have enlarged farmers' exposure to price risks, instead of ensuring market stabilization. As a result, the extreme volatility of international markets that appeared clearly in 2007-2008, inevitably engaged EU farmers who considerably experienced price fluctuations of food commodities (Diaz-Caneja *et al.*, 2008; Matthews, 2010). Thus, there was a need for a new policy intervention promoted by the CAP to help farmers withstand temporary price shocks and hedge risks (EC, 2005).

In order to face the increasing exposure to market crises, nowadays the new CAP reform 2014-2020 stresses the importance of agricultural risk management for the stabiliza-

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tion of farm incomes. Such reform shifted the risk management from the first to the second pillar that is funded by the European Agricultural Fund for Rural Development (EAFRD), considering this topic as one of the new six priorities for the EU rural development. It follows that risk management envisages, by its very nature, a cross-strategy actually. Indeed, while promoting different tools, the agreed strategy for risk management also contributes to the adaptation to climate change, the promotion of innovation for a better management of farm riskiness, until responding to one of the most important objectives of rural development policy as improving farmers' livelihood and competitiveness by contributing to their income stabilization.

More specifically, the new CAP reform has enlarged the existing toolkit for risk management, i.e. insurances and mutual funds, by introducing a specific instrument known as Income Stabilization Tool (IST). Due to the expansion of the number of available tools and the promotion of synergies among them, the new EU strategy for risk management is found to be in line with what suggested also by OECD (2011), as the adoption of different strategies gives a concrete response to different business needs in terms of riskiness reduction, instead of concentrating on a single risk factor (e.g., hail) or solution (e.g., insurance). Thus, in addition to financial contributions to insurance premiums and mutual funds that traditionally compensate farmers' yield losses, the new IST grants a financial support to mutual funds that have previously compensated farmers for a severe drop in their incomes. Particularly, according to EU Regulation n. 1305/2013 (JEU, 2013), the threshold of 30% has been identified to trigger the indemnification by the mutual fund. Thus, farmer's income drop must be greater than 30% of his average annual income during the previous three-years or, alternatively, the average income during the preceding five-years excluding both the highest entry and the lowest one. Moreover, the reference income must refer to the sum of farmer's revenues from the market, excluding input costs and including every form of public support. Following the rules, the IST mechanism legislates that a mutual fund can compensate farmers up to 70% of their income loss. Afterwards, an ex-post reimbursement to the mutual fund is provided by the European Union up to the tune of 65% of what previously compensated to farmers, according to the WTO green box (Pigeon *et al.*, 2012).

The literature discussion around this new instrument allows to provide a better description of both the novelty and the advantages of the IST. This new instrument *de facto* allows a full risks' coverage for the whole-farm income loss (e.g. related to both yield and income) (Finger and El Benni, 2014), instead of only yield loss as for insurances and mutual funds, whatever the nature of the risks. What is more, such new tool represents a form of self-insurance among farmers who, instead of transferring the risk as done by insurances, choose to deal with and share the income risk self-financing (Borrelli *et al.*, 2013). In addition, due to the fact that members share and establish by themselves the rules of the mutual fund, IST can potentially overcome two main problems related to asymmetric information, as moral hazard and adverse selection (Pigeon *et al.*, 2012): the former could be counteracted by establishing both an indemnifying threshold related to a reference group of farmers (instead of a single member) and member-specific participation costs, whereas the latter, by requiring a compulsory participation to the mutual fund to farmers. However, in May 2016 a Ministerial Decree[1] established the voluntary participation to mutual funds by farmers in Italy. On the contrary, the implementation of the IST could potentially discourage the use of other risk management tools, as raised by Mary *et al.* (2013). Moreover, although it may reduce income disparities within the farm population (Finger and El Benni, 2014), the proposed IST as well as its implementation are likely to encounter some problems with respect to the establishment of mutual funds by farmers and the assessment of membership's costs, reference income and trigger levels (MIPAAF, 2015a). Accordingly, Meuwissen *et al.* (2011) confirm that there is still need to establish some important aspects as income trigger levels per year, per farm type and per country.

According to this and based on the evidence that economic risks do not affect all agricultural sectors equally (Vrolijk and Poppe, 2008; Enjolras *et al.*, 2014), a recent proposal presented to the European Commission in September 2016 (EC, 2016) aims at allowing the possibility for EU Member States to establish sector-specific ISTs that provide financial support only to particular sectors, affected by a severe (and duly justified) income drop. In addition, this document (that is currently under the EU co-decision procedure) also proposes the hypothesis to consider the threshold of 20%, instead of 30%, for such specific weak sectors.

Risk management in Italy boasts a long history as specific national resources have been addressed to this from 1970 by the National Solidarity Fund (Law n. 364), subsequently reformed in 2004 (Legislative Decree n. 102). In 2009 the Health Check (JEU, 2009) let the Member States the possibility to benefit also from EU funds[2] to support the promotion and implementation of risk management instruments, in addition to national reserves. In particular, this reform promoted farmers' incentives to stipulate insurance contracts and to participate to mutual funds to cover yield losses due to adverse climatic events, animal or plant diseases, and pest infestation. The measures related to risk management in Italy have been included within a national plan, namely the National Rural Development Programme (NRDP) (MIPAAF, 2015b). This plan has been formally approved in November 2015 by the European Commission and in Italy it will be subsidized with around 1.6 billion € addressed over the period 2014-2020.

The IST measure is currently applied by three Member States only, as Hungary, the region of Castilla y Leon in

[1] G.U. n. 141/2016, art. 10

[2] See also Reg. (EC) No 1234/2007 (JEU, 2007) and Reg. (EC) No 479/2008 (JEU, 2008) on Common Market Organization for fruit and vegetable and the wine sectors, respectively.

Spain and Italy. The latter, in particular, has allocated the highest budget for the IST (around 97 million €) and this proves the renewed emphasis on the prominent issue of agricultural risk management within the Italian policy agenda.

During the last years, many studies have investigated different aspects of agricultural risk management: for instance, the role of EU direct payments in stabilizing farm income both in Italy (Severini *et al.*, 2016) and in France (Enjolras *et al.*, 2014); the effectiveness of income insurances to cope with income losses (Meuwissen *et al.*, 2011) and farmers' willingness-to-pay for them (Pérez-Blanco and Gómez, 2015); finally, the feasibility of the IST in Swiss (Finger and El Benni, 2014) or in Italy at national (Dell'Aquila and Cimino, 2012) or at regional level (Finco *et al.*, 2013). Among these, only few studies were concerned with the factors affecting the probability of income loss under the EU regulatory framework in Italy (Pontrandolfi *et al.*, 2016; Trestini *et al.*, 2017). Nevertheless, there are still many doubts that prevent an easy and practical implementation of the new IST as: collecting farms' incomes, improving strategies to limit strategic behavioural advantages (i.e., information asymmetry), quantifying individual ex-ante financial contribution to the mutual fund by associated members, and restricting the participation to active farmers only (El Benni *et al.*, 2015).

In this framework, this research represents a first preliminary effort for further implementations of the IST by analysing the probability of farms' income reduction based on some main characteristics. Indeed, in order to contribute to the debate on risk assessment according to different types of agricultural production, this paper aims at identifying the potential beneficiaries of IST indemnification within the Italian farm population, focusing on Veneto region. In particular, this study quantifies how factors as company structure, CAP reforms and the type of farm influenced the probability of significant income drops during the period 1980-2007. Results contribute to the growing literature on the steady dependency of income risk exposure to market variability, as shown by the relevance of specific farms' types and characteristics on the probability of a severe income drop.

## 2. Materials and Methods

Being consistent with both D'Auria *et al.* (2013) and Dell'Aquila (2013) and in line with the current EU Regulation for Rural Development and the Italian NRDP, this study adopted the Value Added (VA) as a reference income. In order to quantify farms' income variations in Veneto region, the difference between the value added (VA) of the current year and the average VA of the previous three years (reference income) for each farm was calculated. Although income variation is a quantitative continuous variable, in this analysis it was coded as a binary variable with two levels ($y_i$= 0, 1). A binary logit model (Greene, 2000) analysed the probability of a severe income drop, i.e. an income variation greater than 30% ($y_i$ =1) compared to the average income of the previous three years, as follows:

$$Prob(y_i = 1) = \frac{\exp(\beta' x_i)}{1 + \exp(\beta' x_i)} \quad (1)$$

Data related to the period 1980-2007 and collected by the Farm Accountancy Data Network (FADN) were used. In particular, only farms observed for at least four consecutive years were included in the model, so that minimum range of time allows the calculation of a reference income and a comparison with the observed income of the fourth year. It follows that, from the original dataset of 35,894 observations, a smaller dataset with 6,605 observations was selected.

Because the change in a farm's structure during the period of observation may generate an incorrect quantification of income variation, the reference income was calculated starting from a partial account of different production processes: in particular, it was calculated separately for crop and animal production processes for each farm, being expressed per hectare (Utilised Agricultural Area - UAA) and Livestock Standard Unit (LSU), respectively. In this way, instead of being observed, the reference income has been calculated by multiplying the individual average VA (per hectare and/or LSU) of the reference period by the number of hectares or LSU observed in the current year in the same farm. It follows that income variation for each farm in a specific year is based on the difference between the observed VA and the previously calculated reference income.

Table 1 reports the frequency of income variation for different farm types, while Table 2 reports the descriptive statistics of the variables introduced in the model. As previously mentioned, the period considered in this study spans some different policy changes occurred through different CAP reforms (see Table 2): from the measures of market intervention before the MacSharry reform, moving to coupled payments (MacSharry and Agenda 2000) and finally to decoupled single payment scheme provided by the Mid-Term Review reform. All the variables considered in the model are introduced in Table 3 based on their significance. Finally, multicollinearity has been tested analysing the Variance Inflation Factors and accepting model specifications with VIF values lower than 3.

Table 1 - *Observed variation in farms' VA by farm type.*

| Farm type | % Variation on VA (Δ%) | | | N. Obs. |
|---|---|---|---|---|
| | Δ%>= 0% | -30%<= Δ%<0 | Δ%<-30% | |
| Field Crops | 47.6% | 42.5% | 9.9% | 1,881 |
| Horticulture | 51.7% | 29.3% | 19.0% | 437 |
| Viticulture | 65.1% | 27.5% | 7.4% | 770 |
| Other permanent crop | 58.3% | 30.7% | 10.9% | 576 |
| Specialist milk | 54.2% | 34.9% | 10.9% | 997 |
| Specialist cattle fattening | 37.4% | 32.3% | 30.3% | 155 |
| Mixed cattle | 57.2% | 29.5% | 13.4% | 292 |
| Specialist granivores | 52.1% | 18.5% | 29.4% | 119 |
| Mixed crops | 61.9% | 25.6% | 12.5% | 632 |
| Mixed crop with livestock | 62.6% | 29.5% | 7.9% | 746 |
| Total | 55.2% | 33.4% | 11.5% | 6,605 |

Source: Own elaboration, FADN 1980-2007.

Table 2 - *Variables description and descriptive statistics.*

| Variable name | Type of variable | Variable Description | Statistics |
|---|---|---|---|
| | | *Farm type* | *% of total observations* |
| type_1 | D | Specialist Field crops | 28.5% |
| type_2 | D | Specialist Horticulture | 6.6% |
| type_3 | D | Specialist Viticulture | 11.7% |
| type_4 | D | Other permanent crop | 8.7% |
| type_5 | D | Specialist milk | 15.1% |
| type_6 | D | Specialist cattle fattening | 2.3% |
| type_7 | D | Mixed cattle | 4.4% |
| type_8 | D | Specialist granivores | 1.8% |
| type_9 | D | Mixed crops | 9.6% |
| type_10 | D | Mixed crop with livestock | 11.3% |
| | | *Geographical location* | *% of total observations* |
| lowland | D | Farm located in lowland | 71.7% |
| hill | D | Farm located in hill area | 15.4% |
| mountain | D | Farm located in mountain area | 12.9% |
| | | *Farm structure* | *Mean values* |
| uaa | C | Utilised Agricultural Area (ha) | 17.9 |
| lsu | C | Livestock Standard Unit (n.) | 23.1 |
| lu | C | Labour unit (n.) | 1.8 |
| lsu_ha | C | LSU per hectare (n./ha) | 2.4 |
| lsu_lu | C | LSU per labour unit (n./LU) | 9.4 |
| lu_ha | C | LU per hectare (n./ha) | 0.3 |
| | | *Economic variables* | *Mean values* |
| va_05 | C | Reference VA (€) (2005 values) | 46,815 |
| va_ha | C | VA per hectare (€/ha) (2005 values) | 7,642 |
| va_lu | C | VA per labour unit (€) (2005 values) | 33,613 |
| s_int | C | Interest over total revenue (%) | 5.8% |
| | | *Common Agricultural Policy Reforms* | *% of total observations* |
| cmo | D | Measures before MacSharry reform | 25.1% |
| mcs | D | MacSharry CAP | 43.6% |
| a2000 | D | Agenda2000 CAP | 14.4% |
| mtr | D | Mid-Term Review CAP | 16.9% |

Legend: "C" continuous variable; "D" dummy variables.
Source: own elaboration, FADN 1980-2007.

## 2. Results and Discussion

As shown in Table 3, the estimated model assesses a number of variables, related to farms' characteristics, that may have influenced an income reduction greater than 30% within the considered period of time. However, the model shows a limited ability to predict values (Pseudo-$R^2 = 0.099$). The first group of variables includes those related to the farm type. Compared to farms specialised in field crops (i.e., base category), the estimations highlight that the farms with the higher probability of a severe income reduction are those specialised in horticulture (*type_2*), permanent crops other than viticulture (*type_4*) and those specialised in animal production *(type_6* and *type_8*), with the exception of milk production (*type_5*), over the period 1980-2007. The good performance of this last farm type could be related to two reasons: on one side, the relevant amount of milk used for the production of quality cheese that, given its strengthened market, ensures a steady demand; on the other side, the permanence of EU quota regime, that guaranteed a sure revenue for farms over the observed period. Compared to field crops, mixed crop producers also exhibit a higher income risk, being consistent with the findings of Severini *et al.* (2016) related to income variability. The farm type with the lowest probability of income reduction is "mixed crops with livestock" (*type_10*). This result suggests that a significant reduction in income risk could be reached only at a high level of farm diversification, involving both crops and animal production.

In terms of geographical location, farms located in hill areas exhibit lower income risk compared to farms located in lowland. These results, consistent with El Benni *et al.* (2012) and Enjolras *et al.* (2014), could be partially explained by the large diffusion of quality viticulture in hill areas.

Variables related to farm structure showed significant effects only in association with different farm types (for ease of interpretation only significant coefficients are included in the model and reported within the table). More in detail, our results allow to define some specific farm strategies that contribute to reduce the probability of a strong income reduction. In particular, farms specialized in field crops (*type_1*) may reach this result by reducing the labour unit per hectare (*lu_ha*) that is consistent with an increase in mechanisation. On the contrary, farms specialized in horticulture (*type_2*) and other permanent crops (*type_4*) may increase the labour unit per hectare (*lu_ha*); this could be related to their supplying the market with quality products, instead of industrial production. A good solution to reduce income risk for farms specialized in cattle fattening (*type_6*) could be the reduction in the livestock standard unit per hectare (*lsu_ha*) and the increase in the LSU per LU (*lsu_lu*), that may result in a lower feed dependency from the market and a necessary improvement of the level of automatization in herd management. In contrast with *type*_6, farms specialized in granivores (*type_8*) should reduce the LSU per LU, as the complexity of pigs' rearing systems may suggest the need to improve the monitoring of the production process. Finally, farms with mixed crops with livestock (*type_10*), such as *type*_6, should reduce the LSU per hectare, thus reducing the feed dependency from the market as well.

Focusing on farm economic variables, results show that the absolute economic dimension of farms (*va_05*) has no significant effect on the probability of income drop. Conversely, increasing levels of VA per hectare (*va_ha*) and per

Table 3 - *Logit model estimates.*

| Variable | Coefficient | SE | P[\|Z\|>z] |
|---|---|---|---|
| Cons. | -3.526 | 0.160 | 0.000 |
| *Farm type* | | | |
| type_2 | 1.437 | 0.210 | 0.000 |
| type_3 | 0.100 | 0.187 | 0.592 |
| type_4 | 0.917 | 0.264 | 0.001 |
| type_5 | -0.015 | 0.166 | 0.926 |
| type_6 | 0.573 | 0.302 | 0.058 |
| type_7 | 0.120 | 0.214 | 0.576 |
| type_8 | 0.601 | 0.348 | 0.084 |
| type_9 | 0.462 | 0.164 | 0.005 |
| type_10 | -0.540 | 0.214 | 0.012 |
| *Geographical location* | | | |
| hill | -0.536 | 0.147 | 0.000 |
| mountain | 0.096 | 0.145 | 0.509 |
| *Farm structure*farm type* | | | |
| lsu_ha*type_6 | 0.075 | 0.031 | 0.015 |
| lsu_ha*type_10 | 0.117 | 0.042 | 0.005 |
| lsu_lu*type_6 | -7.50E-03 | 0.004 | 0.036 |
| lsu_lu*type_8 | 4.90E-03 | 0.002 | 0.004 |
| lu_ha*type_1 | 0.935 | 0.380 | 0.014 |
| lu_ha*type_2 | -0.400 | 0.139 | 0.004 |
| lu_ha*type_4 | -1.883 | 0.688 | 0.006 |
| *Economic variables* | | | |
| va_ha | 3.90E-05 | 8.00E-06 | 0.000 |
| va_lu | 1.10E-05 | 2.00E-06 | 0.000 |
| s_int | 11.543 | 0.952 | 0.000 |
| *Common Agricultural Policy Reforms* | | | |
| mcs | -0.070 | 0.117 | 0.551 |
| a2000 | 0.242 | 0.141 | 0.086 |
| mtr | 0.644 | 0.129 | 0.000 |

Source: Own elaboration, FADN 1980-2007.

LU (*va_lu*) lead to an increase in the probability of income decline. Actually, farms generally try to maximize these two economic indexes in relation with land tenure and specific management strategy, in order to achieve the maximization of their profitability. On the one hand, family farms pursue the maximisation of income per LU; on the other hand, industrial farms pursue the maximization of income per hectare. However, our model suggests that the attempt to increase the level of profitability per LU or per hectare leads to a more risky farming activity.

To conclude, the estimated model confirms a significant increase in the probability of income reduction throughout different CAP reforms over time. Despite several authors noting that farms with direct payments could profit from lower income volatility as they represent a less variable component of farmers' income (Cafiero *et al.*, 2007), the estimated results suggest that the introduction of decoupled payments (*mtr*) has been unable to contrast the consequences of the growing market volatility over the observed period.

## 4. Conclusion

Agriculture is a risky activity and farmers are risk-adverse by definition: indeed, they face different types of risks, including yield and price risks, that impact their profitability. To do this, they resort to both ex-ante (e.g., technical and financial tools) and ex-post different strategies. The former, as insurances or the new income stabilization tool provided by the EU rural development policy, are supported by public incentives.

This study aims at assessing the probability of farms' income reduction in Italy, based on some main farms' characteristics. Based on our sample, findings show that farms specialised in fruit and vegetable production and animal production are mostly exposed to severe income losses, being consistent with their higher propensity to insure their productions, as stated by Pontrandolfi *et al.* (2016). Accordingly, farms specialized in cattle fattening due to their making large use of the market to procure both feed and live animals, over the last few years have been suffering from price volatility related to both production inputs and outputs (Boatto and Trestini, 2013). Although our estimates for specialized milk farms indicate a lower probability of income risk compared to specialised crop producers, we can hypothesize that this probability may have been increasing after the reorganization of markets' measures for the milk sector.

Focusing on farms' structural variables, many strategies to limit income risks can be suggested, according to some specific type of farming. Among them, farms' investments focused on reducing farms' feed dependency from the market or improving the mechanization of field crops as well as pursuing the quality strategy for horticultural products, or the automatization for cattle fattening as opposite to granivores, represent only some of the possible solutions to cope with farm income risks, at least based on the observed sample and period of time.

Generally speaking, income maximization through an increase in terms of farms' labour units or hectares is found to increase the probability of income drops. Moreover, farm diversification of crops with livestock is found to be a valid ex-ante self-covering strategy for coping with risks (Bowman and Zilberman, 2013; Enjolras *et al.*, 2014), instead of the mere crop diversification.

In relation to farms specialized in milk production, results confirm somehow the positive role played by EU quota regime to stem farms' economic risk. To this respect, although the estimated model takes advantage of a collection of observations from a relatively extended period, however the inclusion of more recent data could be useful to highlight the effect of new factors such as the milk quotas' abolition or financial market perturbation on income risk. However, due to some significant changes in the methodology of regional FADN data collection occurred since 2008, it ought to be difficult to operate the same estimates for more recent observations.

Nevertheless, some critical points exist as the financial sustainability of such income stabilizing mutual funds at the early stage as well as the lack of farmers' knowledge and information about both costs and benefits of the IST that, in addition to individual preferences and credit constraints, might prevent a large adoption of the new instrument, disappointing current EU expectations. It follows that there is need of a targeted political support for a communication that is as tailored as possible for farmers.

Moreover, in order to provide the necessary momentum to actively build the new IST in Italy, based on our results, the challenge is now to achieve a sufficiently critical dimension

and interest among the stakeholders, especially farmers who belong to particular sectors that have been mostly affected by economic variability during the last years.

Finally, one last comment has to be considered as our results confirmed the effectiveness of some sector-specific public supports to guarantee farm economic viability, as in the case of farms specialized in milk production. It follows that it is worth rethinking to and better investigating and monitoring over time the impact of policy changes (e.g., milk quotas' abolition or CAP reforms) on farm risk profile, at least when they historically occur. Although the idea of considering a regionally sized sample of farms could represent a limit of this study, this has helped us to focus better on income variability dynamics that are specific to particular farm types and locations. Accordingly, Enjolras *et al.* (2014) suggested the need to specifically target risk management instruments to both farm location and production in order to verify their appropriate use, avoiding their risk-enhancing possible role.

To conclude, while framing farmers' characteristics and their riskiness in relation to a significant sample of farms, this paper reveals some interesting considerations that can potentially contribute to support the decision-making and the policy debate on this topic and that may be taken into account to spur a rapid implementation of the IST in Italy, since nowadays it still suffers both the lack of a specific legislation and the appropriate cohesion among farmers and their representative associations.

## Acknowledgements

The authors thank the anonymous referees for their valuable comments and suggestions on an earlier version of this paper. The authors accept full responsibility for the content of the paper.

This research is linked to the Project 'Strengthen farms resilience to market volatility through the implementation of the Income stabilization Tool (IST) under the CAP Post-2013' (CPDA153138) financed by the University of Padova, Italy.

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